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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/654,078	09/01/2000	Jianmin Qiao	195425US77	5893

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EXAMINER
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PHAM, HOAI V

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 11/29/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/654,078

Applicant(s)

QIAO, JIANMIN

Examiner

Hoai V Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2001.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Election/Restriction***

1. Applicant's election with traverse of claims 1-10 in Paper No. 4 is acknowledged.

The traversal is on the ground(s) that "the Examiner has not carried the burden of providing any reason and/or examples to support any conclusion that the claims of the restricted groups are patentably distinct". This is not found persuasive because

a) The above two different classifications show the need for two entirely different fields of a search.

b) The inventions are in different statutory classes which have different case law basis for examination.

c) Non-restriction would mean that if one of the inventions were held to be unpatentable then the other would also be inherently held to be unpatentable.

Therefore, restriction is proper since there are apparently two different inventive concepts in making the device and in the device itself.

The requirement is still deemed proper and is therefore made FINAL.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 10/17/00 has not been considered because the applications serial No. (09/593,967; 09/593,968; 09/654,078) are still pending.

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***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-5 and 9-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Chittipeddi et al. [U.S. Pat. 6,313,025].

Chittipeddi et al. (figures 2-7, cols.2-4) discloses an interconnect structure comprising :

a contact dielectric layer (105) ;  
an etch stop layer (110) over the contact dielectric layer;  
a trench dielectric layer (115) over the etch stop layer; and  
an electrically conductive (147, 145) in (i) a hole (125) through the contact dielectric layer and the etch stop layer, and (ii) a trench (135) in the trench dielectric layer, wherein the etch stop layer comprises one member selected from a group consisting of an undoped silicon oxide and a doped silicon oxide (see col. 3, lines 10-

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21); and each of the contact dielectric layer and the trench dielectric layer independently comprises the other member of the group (see col. 2, lines 59-67).

With respect to claim 2, Chittipeddi et al. discloses that the etch stop layer comprises an undoped silicon oxide (see col. 3, lines 20-21), the contact dielectric layer comprises a first doped silicon oxide (see col. 2, lines 62-67) and the trench dielectric layer independently comprises a second doped silicon oxide (see col. 3, lines 23-25).

With respect to claim 3, Chittipeddi et al. discloses that the first and second doped silicon oxides independently further comprise at least one fluorine, boron and phosphorus (see col. 2, lines 62-67).

With respect to claim 4, Chittipeddi et al. discloses that the first and second doped silicon oxides are independently selected from the group consisting of a fluorosilicate glass, a borosilicate glass, a phosphosilicate glass, and a borophosphosilicate glass (see col. 2, lines 62-67).

With respect to claim 5, Chittipeddi et al. discloses that the trench (135) in the trench dielectric layer is wider than the hole (125) through the etch stop and contact dielectric layers (see figure 6).

With respect to claim 9, Chittipeddi et al. discloses that the electrically conductive interconnect (145) comprises a member selected from the group consisting of Al (see col. 4, lines 19-20).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chittipeddi et al. [U.S. Pat. 6,313,025] in view of White, Jr. et al. [U.S. Pat. 6,130,102].

Chittipeddi et al. discloses that the substrate (100) comprises silicon (see col. 3, lines 1-5). Chittipeddi et al. does not particularly show that a gate structure comprises a gate dielectric over the substrate, a gate over the gate dielectric, a cap dielectric layer over the gate, and the spacers adjacent to the gate and the cap dielectric on the substrate in contact with the contact dielectric layer. However, White, Jr. et al. shows that it is conventionally in the art to form a gate structure comprises a gate dielectric (18) over the substrate (12), a gate (20) over the gate dielectric, a cap dielectric layer over the gate, and the spacers (24) adjacent to the gate and the cap dielectric, wherein the gate structure on the substrate in contact with the contact dielectric layer (28) (see figures 2-6, cols. 3-7). Therefore, it would have been obvious to the skilled in the art to form the cap dielectric over the gate and the spacers adjacent to the gate and the cap dielectric in the Chittipeddi et al. device to protect the gate.

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**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP  
Hoai Pham  
November 12, 2001

  
OLIK CHAUDHURI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800